AL FAATEH UNIVERSITY
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PAPAVERACEAE

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PAPAVERACEAE

S.M.H.JAFRI

Herbs, very rarely shrubs or small trees, usually with milky or coloured juice. Leaves alternate, exstipulate, mostly dissected or lobed. Inflorescence solitary terminal, subumbellate or paniculate. Flowers often large and showy, bisexual, regular, hypogynous. Calyx of 2-3, free sepals, rarely united, imbricate, caducous. Petals 4-6 (rarely absent or 8-12), in 1-3 whorls, free, imbricate. Stamens usually indefinite in several whorls, free; anthers dithecous, longitudinally dehiscent, small; filaments filiform or winged. Gynoecium 2-many-carpellary, syncarpous, 1 (-2)-locular, often with several incomplete locules; ovules few to many on parietal placenta, anatropous or campylotropous; style 0-1; stigmas as many as the carpels. Fruit mostly capsule, dehiscing by pores or valves, rarely indehiscent; seeds small, albuminous.

About 25 genera and nearly 200 species, mostly of temperate or subtropical regions of northern hemisphere; only 4 genera reported from Libya; of these *Eschscholtzia* is known from cultivation. *Hypecoum* is treated separately under the family Hypecoaceae. Taxa marked with an asterisk are known from cultivation only.

1. \+ Fruit linear, usually at least 10 times as long as broad — 2
   — Fruit semiglobose or oblong, less than 5 times as long as broad, dehiscent by apical pores. — 3. **Papaver**

2. \+ Latex watery. Calyx detached forming a hood over petals when flower is opening — 4. **Eschscholtzia***
   — Latex yellow. Calyx not forming a hood as above — 3

3. \+ Stigmas 2, conical. Fruit 2-valved, usually with 2 apical horns — 1. **Glaucium**
   — Stigmas 3-4, capitate. Fruit 3-4-valved, without apical horns — 2. **Roemeria**

PAPAVERACEAE

1. GLAUCIUM

Miller, Dict. (abr. ed. 4). 1754

Herbs with yellow latex, leaves alternate, decompound, pinnatifid or pinnatisect; segments lobed or denticulate. Flowers solitary, axillary or terminal, peduncled, large, showy, yellow or red. Sepals 2, caducous. Petals 4, sometimes spotted at the base, broadly obovate to orbicular. Stamens many; anthers extrorse, oblong or linear on long filaments. Ovary linear-oblong, pilose, tuberculate or not; stigmas conical. Fruit a siliqua-like capsule, dehiscent by 2-valves leaving the seeds with the spongy septum at maturity; seeds numerous, ovate-reniform, pitted, without aril.

About 21 species, chiefly of the Mediterranean and Central Asian regions; represented by 2 species in Libya.

+ Petals usually orange-red; ovary pilose; capsules hispid or pilose with simple hairs. Annual herb.	2. **G.corniculatum**
— Petals yellow. Ovary papillose. Capsules glabrous but usually papillose-tuberculate. Perennating herb	1. **G. flavum**

1. **Glaucium flavum** Crantz, Stirp. Austr. 2: 133. 1763; Durand and Barratte, Fl. Lib. Prodr. 7. 1910; Pamp., Pl. Trip. 113. 1914; Prodr. Fl. Cir. 210. 1931; Maire, Fl. Afr. Nord. 11: 281. fig. 133. 1964; Keith, Prelim. Check List Lib. Fl. 521. 1965. (incl. var.). (Fig. 1)

Chelidonium glaucium L., Sp. Pl. 506. 1753; *C.luteum* Scop., Fl. Carn. ed. 2(1): 369. 1772.

Perennating herb, glaucous, subfleshy, sparsely pubescent to almost glabrous, up to 60 (-90) cm tall or long. Basal leaves lyrate, pinnately lobed, 15-35 cm long; lower segments smaller and almost entire than the upper, coarsely dentate longer segments; cauline leaves smaller, ovate, lobulate, amplexicaule. Flowers yellow, showy. Sepals ovate-lanceolate, 2-3 cm long, ± pubescent, caducous. Petals broadly obovate, (2.5-) 3-3.5 (-4) cm. Stamens many, yellow; filaments filiform; anthers c. 2 mm long, linear. Ovary tuberculate or papillose throughout, cylindrical. Capsules 15-20 (-22) cm x (3-) 3.5-4 (-4.5) mm., often curved, ± papillose, glabrous, not constricted between the seeds; pedicels up to 5 cm long in fruit, thickened,

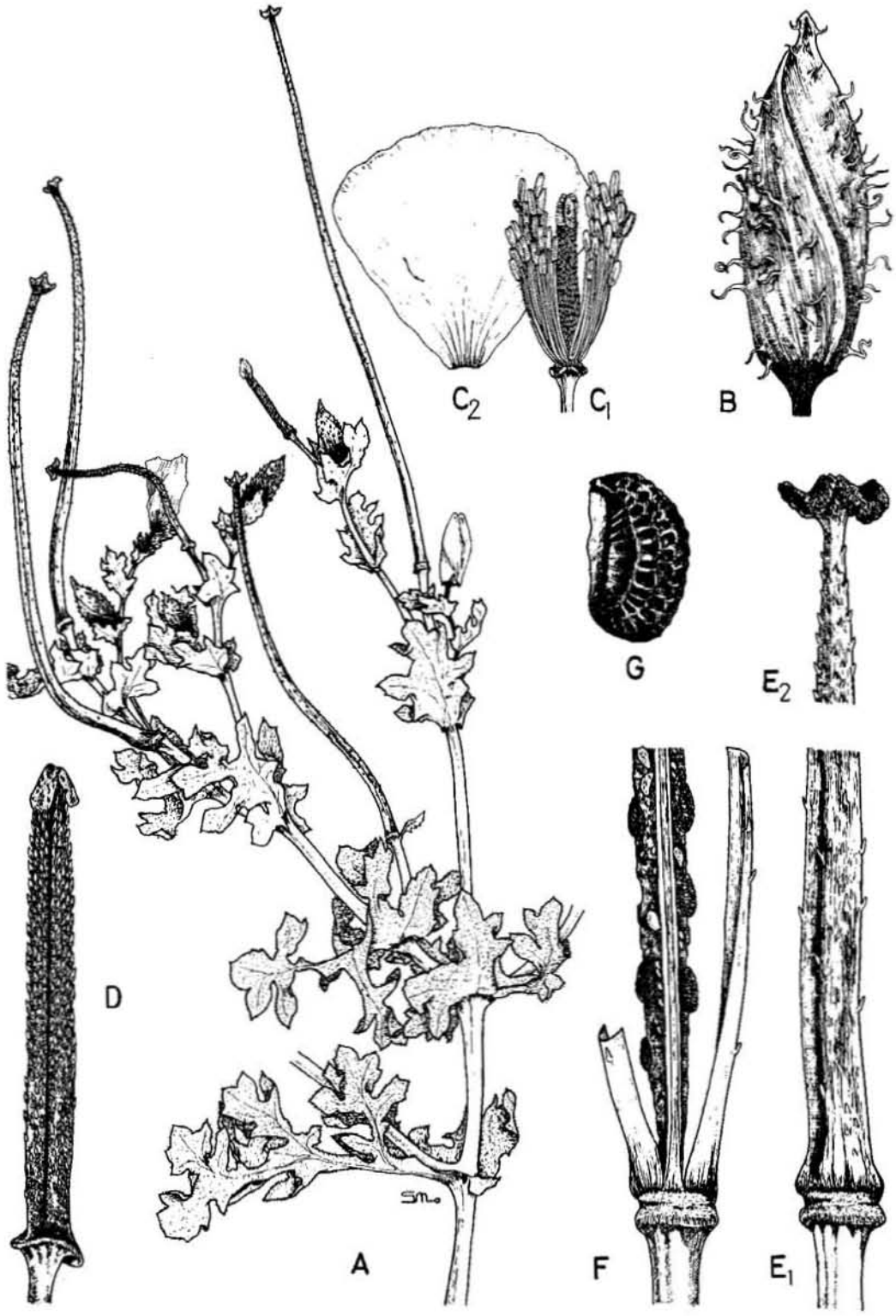


Fig. 1 **Glaucium flavum:** A, a flowering and fruiting branch x 0.5 B, flower bud x 3; C_1, stamens and gynoecium x 1.5; C_2, petat x 1.5; D, young fruit x 2.5; E_1, Lower portion of fruit x 3; E_2, upper portion of fruit x 3; F, lower portion of a dehisced fruit x 3; G, seed x 15.

ascending to spreading; seed c. 1.5 x 1 mm., oblong-subreniform. 2n = 12.

Type: Described from Europe, Mediterranean region.

A-3 Mallaha coastal road, 5 km east Tripoli, 15.4.1967, *L. Boulos* 1652 (ULT); Al Khoms, flowers orange, 14.5.1975 *Zenab* 426 (ULT); rocky soil, yellow flowers, 1.4.1974, *M. Godeh* 306 (ULT); Leptis magna, flowers yellow, 1.5.1974, *Milad, K.* 424 (ULT); El Naggazah, 1.5.1974, *Gassem* 577 (ULT); Taurga, 14.5.1975, *Zenab* s.n. (ULT); **A-6** Dariana, c. 40 km from Bengazi, c. 0.5 km from the sea, near cultivated field, large basal pinnatisect leaves, flower yellow, 16.6.1972, *S.I.Ali* 451 (ULT); **A-7** Derna, stony, calcarious mound, roadside, common, plants c. 40 cm tall, flowers yellow, 16.6.1972, *S.I.Ali* 451 (ULT); Derna, stony, calcarious mound, roadside, common, plants c. 40 cm tall, flowers yellow, rosette leaves large, perennating 25.10.1975, *S.M.H.Jafri* 6102 (ULT).

Distribution: Europe & N. Africa.

A coastal species of sandy and rocky places.

Fl. Feb.-Oct.

2. **Glaucium corniculatum** (L.) J.H.Rud, Diss. Fl. Jen. Pl. 13. 1781; Curt., Fl. Lond. 6, tab. 32. 1817; Durand & Barratte, l.c. 6; Pamp., Pl. Trip. 112. 1914; Fl. Cir. 210. 1931; Maire, l.c. 279, fig. 132; Keith, l.c. 521. (Fig. 2).

   Chelidonium corniculatum L., Sp. Pl. 506. 1753; *G. aurantiacum* Mart., Flora 11: 171. 1856; *G. corniculatum* var. *aurantiacum* (Mart) Rouy et Fouc., Fl. France, 1: 164. 1893; Maire, l.c. 281; Keith, l.c. 521; *G. refractum* Nab. in Publ. Fac. Sc. Univ. Masaryk (Brno) 35: 22. 1923; *G. corniculatum* ssp. *refractum* (Nab.) Cullen in Notes Roy. Bot. Gard. Edin, 25: 41. 1963.

Annual, rarely biennial herb, pubescent, up to 40 cm tall. Leaves lyrate-pinnatifid with unequal segments; basal petiolate, up to 25 cm long; upper sessile. Flowers orange or reddish, (2.5-) 3-5 cm in diam. Sepals 2-2.5 cm long, ± villous, lanceolate. Petals obovate, up to 3 (-4) cm long, often with dark spot at the base. Stamens with dark anthers (c. 1.5 m long) and yellow filaments; capsules up to 20 cm x 4 mm, usually pubescent, straight to curved; seeds ovoid-subreniform, 1 mm long. 2n = 12.



Fig. 2 **Glaucium corniculatum:** A, a flowering and fruiting branch x 0.5; B, flower bud x 1.5; C_1, stamens and gynoecium x 1.5; C_2, petal x 1.5; D, young fruit x 3; E_1, lower part of fruit x 3; E_2, upper part of fruit x 3; F, lower portion of a dehisced fruit x 3; G, seed x 15.

Type: « Habitat in Hungaria, Bohemia, Monspellii », Herb. Linn. 668/4 (LINN).

A-2 Jado, rocky mountains, 6.6.1974, *B. faras* 438 (ULT); Ja ıduba, c. 13 km from Garian, fls. crimson with darker spot, 17.4.1973, *S.I.Ali* 1596 (ULT); Janduba, 25 km from Garian, fls. orange pink, 8.4.1974, *S.I.Ali* 1742 (ULT); Abu Gilan, 6.4.1972, flowers light orange, *S.I.Ali* 149 (ULT); **A-3** Masrata, common, 29.3.1975, *Zenab* 171 (ULT); Abu Geriba, 2?.3.1975, *A. Gammudi* 137 (ULT); Tripoli, Faculty gardens, 24.4.1972, *El Tiafe & El Kwaldi* s.n. (ULT); **A-7** Wadi Derna, 14.3.1968, *L. Boulos* 2399 (ULT); **A-8** Tamimi to Om Razem, 5-50 m, sandy Wadis, flowers tawny ora·ge, 30.3.1970, *P.H.Davis* 50307 (ULT).

Distribution: Europe,N. Africa, eastwards to West Iran.

A widely distributed and variable species; status of its subsp. *refractum* (with spreading pedicels and curved siliquae) is uncertain and Libyan plants include all the variants from erect to spreading curved fruits.

Fl. Feb.-May *Vern.* Gurn-aljadian, Shagigelguern.

2. ROEMERIA

Medicus in Usteri Ann. Bot. 3:15. 1972

Annual, foetid herb with yellow latex, 2-3-pinnate leaves with narrow, linear-oblong lobes, usually hispid, solitary axillary, showy flowers, similar to *Glaucium* but with 3-4-valved, unilocular siliqua-like fruits; seeds small, reniform, without aril.

A small genus of c. 5 species (most of them probably variants of the following species) in S. W. Europe, Asia and N. Africa; only 1 species is found in Libya.

Roemeria hybrida (L.) DC., Syst. Nat. 2: 92. 1821; Durand & Barratte, Fl. Lib. Prodr. 6. 1910; Pamp., Pl. Trip 115. 1914; Maire, Fl. Afr. Nord. 12: 285, fig. 134. 1964 (incl. vars. under ssp. *euhybrida*); Keith, l.c. 839.

Chelidonium hybridum L., Sp. Pl. 506. 1753; *R. violacea* Medic., l.c.; *Glaucium violaceum* (Medic.) Sibth. & Sm., Fl. Graec. tab. 490. 1825; *R. hybrida* var. *latiloba* Pamp. in B. Soc. Bot. Ital. 13. 1914; Fl. Trip. 116. 1914

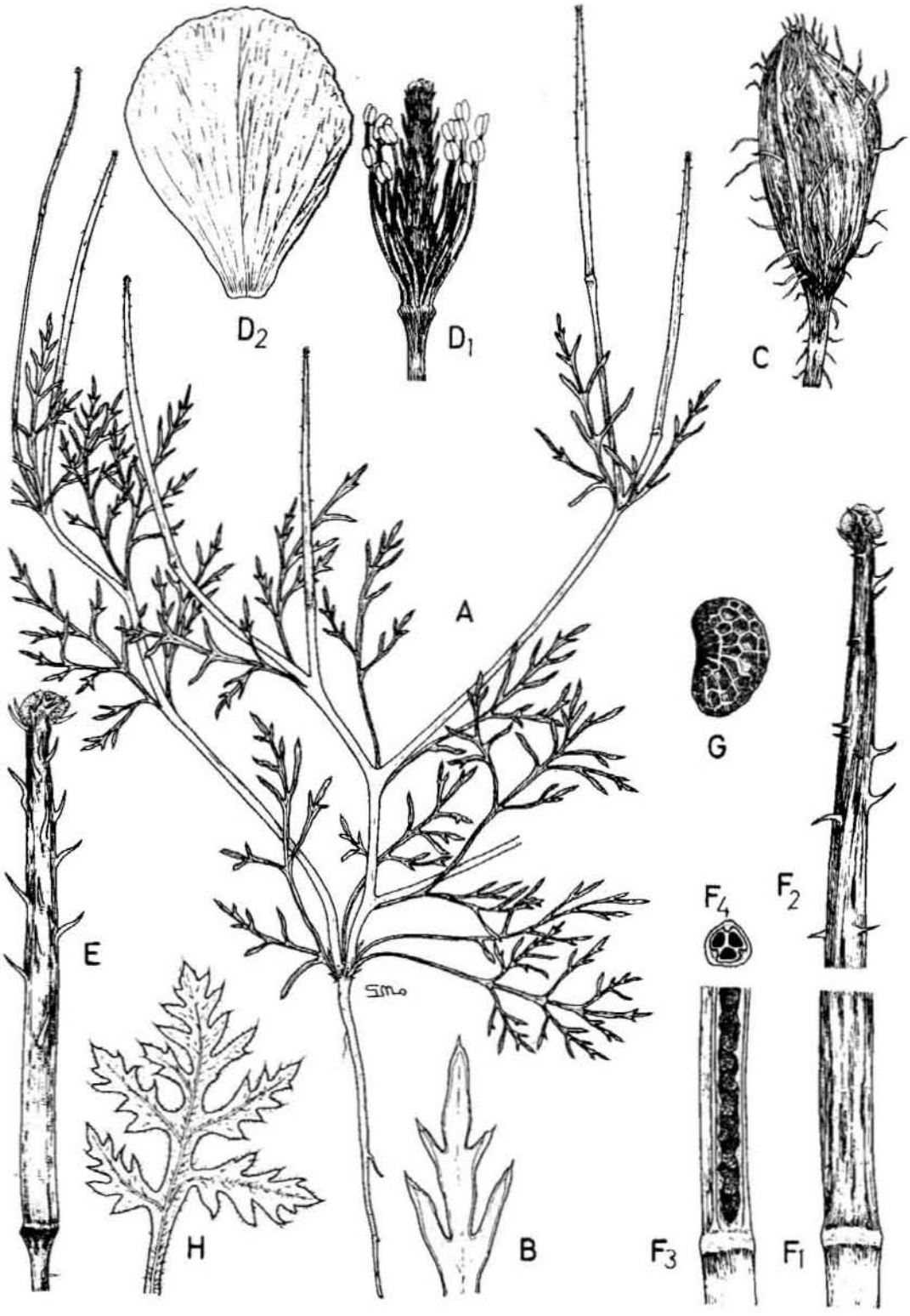


Fig. 3 **Roemeria hybrida** var. **hybrida:** A, habit x 0.5; B, leaf lobes x 2; C, flower bud x 5; D_1, stamens and gynoecium x 3; D, petal x 3; E, young fruit x 3; F_1, lower portion of fruit x 3; F_2, upper portion of fruit x 3; F_3, lower portion of fruit with exposed seeds x 3; F_4, T.S. of fruit x 3; G, seed x 15; var. **dodecandra:** H, leaf lobes x 1.

(as form); *R. tenuifolia* Pamp. in Nouv. Giorn. Bot. Ital. 26: 211. 1919; Prodr. Fl. Cir. 211. 1931; *R. hybrida* ssp. *tenuifolia* (Pamp.) Maire, Fl. Afr. Nord. 11: 287. 1964; *R. simplex* Fedde in Engler, Pflanzenr. 40: 243. 1909; Pamp., Prodr. Fl. Cir. 11: 211. 1931; Keith, l.c. 839.

Annual herb, 10-30 (-50) cm tall, erect or suberect, hispid to almost glabrous. Leaves usually 2-3-pinnatisect, 2-5 cm long, lower or basal petiolate, somewhat broad and sheating at the base; ultimate segments linear to ovate, with or without a pointed terminal bristle; cauline leaves similar but sessile or subsessile rarely 3-fid to almost simple. Pedicels up to 9 cm long, erect to recurved in fruit; buds narrow, pyriform, obtuse, 10-12 x 5-7 mm. Sepals 10-12 x 4-5 mm, oblong, hooded at the apex, densely pilose to glabrous. Petals violet, usually with a black blotch at base, broadly obovate, to subrounded, 20-25 mm. Stamens many, c. 1 cm long; filaments subulate; anthers c. 1.5 mm long. Ovary c. 1 cm long, oblong-linear, usually hispid; stigmas 4, capitate, puberulous. Capsules linear, 20-75 x 1.5-3 mm, densely to sparsely setose, at least above, rarely almost glabrous, dehiscing from base to apex by 3-4 valves; seeds reniform, c. 1 mm in diam.

A very variable and polymorphic species, and some of its forms have been given specific or infra-specific ranks by previous authors. However a taxon of this nature needs further studies from the area with more material. 2 varieties seem to be present in the area.

+ Capsules usually long. Leaf segments linear to linear-oblong	a) var. **hybrida**
— Capsules usually short. Leaf segments ovate to ovate-oblong	b) var. **dodecandra**

a) var. hybrida (Fig. 3,A-G)

Capsules 5-7.5 cm long. Leaves 2-3-pinnatisect; ultimate leaf segments 10-20 (-30) x 1.5-3 mm with a prominent mid-vein.

Type: South Europe, Herb. Linn. 668/6 (LINN).

A-2 c. 37 km from Kaleba towards Mizda, *S.I.Ali* 1965 (ULT); Garian, rare, 10.4.1975, *Zenab* 365 (ULT); *A. Gammudi* 412 (ULT); **A-3** Misrata, 29.3.1975 *Zenab* 184, 185 & 187 (ULT); Alzawia, 29.3.1975, *A. Gammudi* 190 (ULT); **A-2** Orreda, c. 9 km from Garian, barley field, 10.4.1975, *S.I.Ali* 2723 (ULT); **A-7** Wadi

Derna, 10.3.1968, *L. Boulos* 2424 (ULT).

Distribution: Europe, N. Africa to S. W. Asia.

R. simplex Fedde is a smaller plant with 3-fid to almost simple cauline leaves and *R. tenuifolia* Pamp. has almost glabrous fruits (2.5-4 cm long) on robust thickened pedicels up to 7 cm long. However, these characters do not seem consistent.

Fairly common in the arid hills of Gebel Nafousa to the coastal sandy areas. Apparently of no economic use.

Fl. Feb.-April *Vern.* Mungar el gharab.

b) var. **dodecandra** (Forsk.) Durand & Barratte, Fl. Lib. Prodr. 6. 1910; Maire, Fl. Afr. Nord. 12: 286. fig. 134. 1964 (Fig. 3, H).

Chelidonium dodecandrum Forsk, Fl. Aegypt-Arab. 100. 1775; *R. dodecandra* (Forsk.) Stapf in Denks, Akad. Wiss. Wien. 51: 295. 1886; Keith, l.c. 838; *R. orientalis* Boiss. in Ann. Sc. Nat. Ser. 2. 16: 274. 1841; Pamp., Prodr. Fl. Cir. 211. 1931; *R. hybrida* var. *orientalis* (Boiss.) Coss., Comp. 2: 67. 1887; *R. argemonoides* Pomel, Nouv. Mat. Fl. Atlant. 247. 1874; *R. hybrida* ssp. *dodecandra* (Forsk) Maire in Maire & Jehand., Cat. Pl. Maroc. 2: 257. 1932.

Differs from the type variety by its short, broad, ovate-oblong leaf segments.

Type: In desertis Kabirinis, *Forskal* (C).

A-2 Gebel Nafousa, 108 km S.E. of Giado, 700 m, plain of loess at edge of barley field, flowers dark violet, 16.3.1970, *P. H. Davis 49597 (ULT);* **A-7** Wadi Derna, 10.3.1968, *Boulos* 2424 (ULT).

Also reported from Sirte, Bardia, Bengazi by Maire (l.c.).

Distribution: N. Africa, W. Asia to Pakistan.

Species excluded

Keith (l.c. 838-839) included 2 more species from Tripol. (Tripoli & Tarhuna etc) but without citing any specimen. They are as follows and seem superfluous and

probably form of *R. hybrida*.

1. Roemeria columnae Seb. & Maur., - Keith, l.c. 838.

2. *R. ramiflora* Ten., Keith, l.c. 839.

3. PAPAVER

L., Sp. Pl. 506. 1753; Gen. Pl. ed. 5: 224. 1754.

Herbs, usually with milky or yellow sap, ± hairy, sometimes hispid or bristly. Leaves toothed to pinnately lobed. Flowers often large, showy, on long peduncles, solitary, variously coloured or white. Buds drooping; sepals 2(-3), caducous, usually ovate-orbicular, often hispid. Petals 4(-6), ± orbicular. Stamens indefinite with small, extrorse anthers; filaments often dark-coloured. Stigmas 4-20, borne on a sessile disc with wavy to deeply lobed margins, as many as the stigma rarys; capsule globose, ellipsoid or subcylindrical, 1-locular, dehiscing by pores present below the persistent stigmatic disc; seeds small, reniform, many on parietal placentas.

More than 50 species, mostly temperate Eurasian; represented by 5 species in Libya, of these 1 is cultivated.

1. + Cauline leaves amplexicaul or broadly based; peduncles glabrous or almost so — 2
   — Cauline leaves cuneate below, not amplexicaul; peduncles hairy — 3

2. + Capsules subglobose or ovoid with rounded base; leaves shallowly dissected or serrate; stigmatic rays (5-) 8-12 (-18); (peduncle glabrous or sparsely hispid with spreading hairs) — 5. **P. somniferum***
   — Capsules obconical or clavate (obovate - oblong), with base narrowed; leaves pinnately dissected or laciniate; stigmatic rays 4-8; (peduncle glabrous or very sparsely appressedly hairy) — 3. **P. decaisnei**

3. + Capsules glabrous; stamen filaments linear-filiform — 4

	— Capsules setose; stamens filaments slightly broad above	1. **P. hybridum**
4.	+ Capsules subglobose to suboblong with rounded to subrounded base; terminal segment of leaf much longer than the lateral segments	4. **P. rhoeas**
	— Capsules oblong or suboblong with ± narrowed base; terminal segment of leaf ± equal to the lateral ones. (Peduncle usually with appressed hairs)	2. **P. dubium**

1. **Papaver hybridum** L., Sp. Pl. 506. 1753; Durand & Barratte, Fl. Lib. Prodr. 6. 1910; Pamp., Pl. Trip. 114. 1914; Prodr. Fl. Ciren. 213. 1931; Maire, Fl. Afr. Nord. 12: 313. 1964 (incl. vars.); Keith, l.c. 729 (Fig. 4).

Erect or suberect annual, up to 30 (-50) cm tall, sparsely branched, usually stiffly hairy with appressed or subappressed hairs; sap white. Leaves 2-3-pinnatisect with usually linear or linear-ol long, short ultimate segments, up to 20 x 2 (-3) mm, usually bristle-tipped; basal leaves in loose rosette, larger; upper leaves smaller but similar. Flowers 2-5 cm in diam. on (5-) 10-15 (-25) cm long appressedly hispid peduncles. Flower bud (6-) 8-15 x (4-) 6-8 mm, broadly ellipsoid, densely bristly. Petals 10-20 (-25) mm, broadly obovate-suborbicular, usually pink-red to crimson or scarlet (rarely pink or white) with blackish-violet spot at the base; stamen filaments c. as long as the ovary, slightly thickened above, usually violet with somewhat bluish anthers (c. 1 mm long). Capsules 10-15 x 6-12 mm, subglobose or broadly ovate-globose, densely covered with spreading or ± recurved bristles; stigmatic disc short, much narrower than the capsules, convex with 4-8 stigmatic rays, not or hardly exceeding the disc; seeds very small, numerous, grey-brown or black. 2n=14

Type: S. Europe, Herb. Linn. 669/1 (LINN).

A-2 Mangh el Bahar, 2 km before Kaleba, 8.4.1974, *S. I. Ali* 1688 (ULT); 16 km before Rumia (between Josh & Rumia), cultivated field, sandy soil, petal deep red with black spot at the base, 28.2.1975, *S. I. Ali* 2264 (ULT); Gebel Nafousa, 23.3.1971, *L. Boulos* 3556 (ULT); El Awania, Garian, 11.4.1974, *Milad, K.* 359 (ULT); Taglesa mountains, Garian, 12.4.1974, *A. M. A. Razig* 427 (ULT); **A-3** 4 km from Misrata, going towards Hung, roadside, edge of cult. field, branches procumbent, c. 30 cm long, 29.3.1975, *S. I. Ali* 2507 (ULT); 8 km from Tripoli,

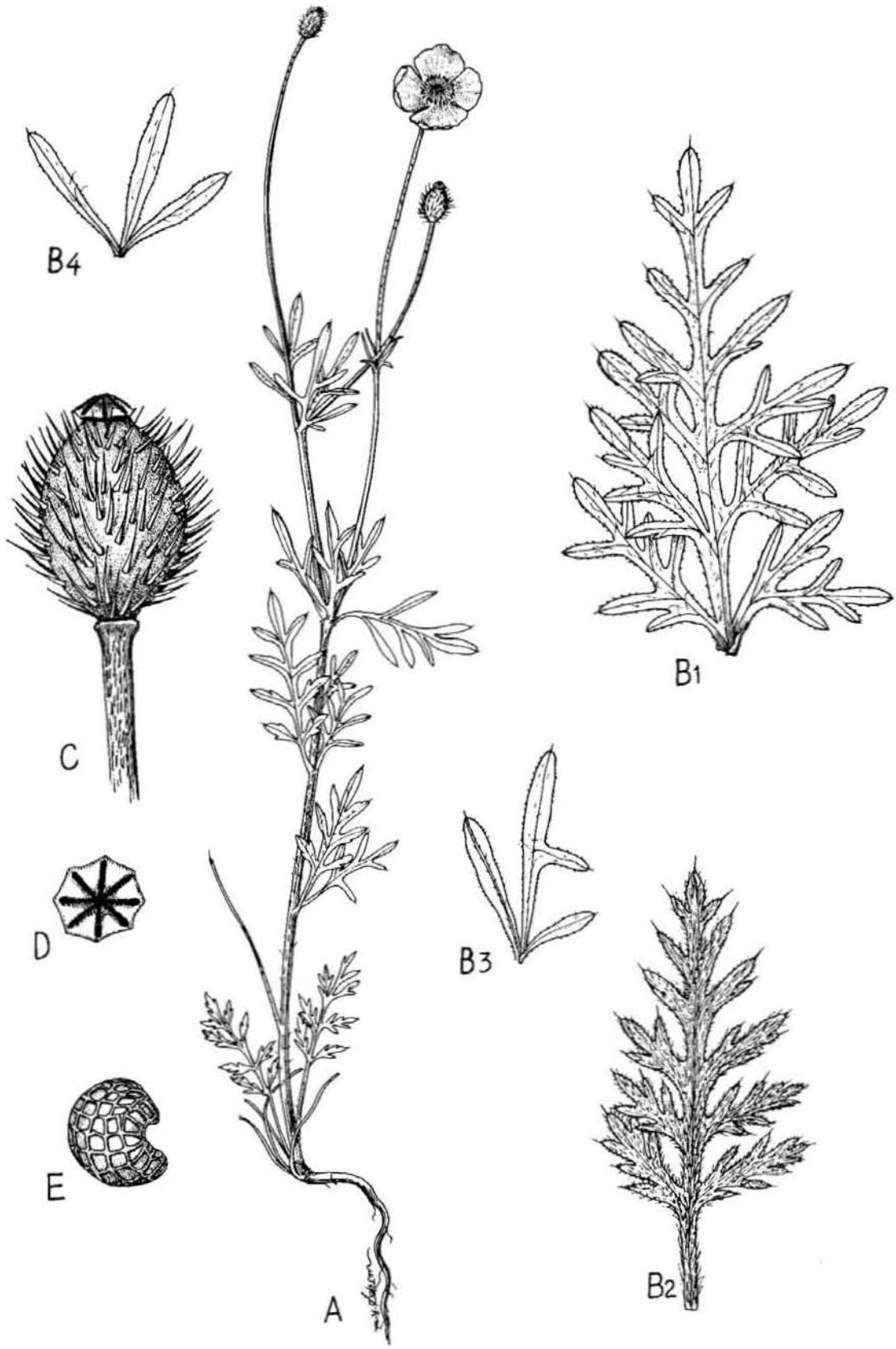


Fig. 4 **Papaver hybridum:** A, habit x 0.5; B_1, B_3 & B_4, upper leaf variation, largest leaf in the gatherings x 0.5; B_2, the same, smallest leaf x 2; C, capsule x 3; D, stigmatic disc x 4; E, seed x 22.

16.2.1976, *Fathi, B. R.* 164 (ULT); Misrata, very common, *Zenab* 170 (ULT); El Goddaieda, 9 km E. Tripoli, 3.3.1967, *I. S. Farag* 22 (ULT); **A-7** Wadi Derna, 14.3.1968, *L. Boulos* 2419 (ULT); **A-8** Al Tamimi, S.E.Derna, 13.3.1968, *L. Boulos* 2250 (ULT).

Distribution: Europe, N. AFrica, S.W. & C. Asia, to Pakistan; introduced elsewhere.

A common species along the coastal areas of Libya. Easily recognized by its setaceous capsules.

Fl. Feb.-April *Vern.* Bugraun, Garaun, Talma.

2. **Papaver dubium** L., Sp. Pl. 1196. 1753; Pamp., Fl. Trip. 114. 1914; Maire, l.c. 302. fig. 140; Keith, l.c. 728 (Fig. 5, E-F).

   P. modestum Jord., Pugill. 4: 1852; *P. collinum* Bogenh. in Bischoff., Delect. Sem. Hort. Heidelb. 4. 1849; *P. obtusifolium* Desf., Fl.Atlant. 1:407.1799; *P. subadpressiusculo-setosum* Fedde in B. Herb. Boiss. ser. 2.5:171. 1905; et l.c. 307. 1909; *P. schweinfurthii* Fedde, l.c. 307; *P. lamottei* Bor., Fl. Centre, ed. 3.2:30. 1857; *P. tenue* Ball., J. Bot. 296. 1873; *P. apicigemmatum* Fedde, l.c. 448.

Annual, up to 60 cm tall, hispid to nearly glabrous, simple or sparsely branched from below; latex usually milky. Cauline leaves usually pinnatifid with linear-lanceolate, acute segments, very variable, subglaucous; basal pinnatisect or pinnatifid, segments ovate, ± obtuse cauline leaves cuneate below. Pedicels appressed-hispid, up to 15 (-20) cm long, droopping above. Flower buds ovoid-orbicular, up 1.5 (-2) cm long sparsely hispid. Flowers usually 3-5 cm across. Petals 2-4 cm long, suborbicular-obovate, red, pink or pale scarlet with basal black spot. Stamens c. as long as the ovary; filaments dark; anthers violet. Capsules oblong, often narrowed below, (10-) 15-20 x 4-8 mm, glabrous; stigma rays 4-10 (-12), very variable, usually falling a little short of the shallowly lobed disk margin; seeds reniform, very small, brownish or bluish-black.

Type: Described from Switzerland & Britain, Herb. Linn. 669/7 (LINN).

A-6 Tokra, seaside, hard gravel and lime stone, 3.3.1973, *S.I.Ali & S.A.Faruqi* 1252 A (ULT)

Distribution: Europe, Asia and N. Africa.

A very variable species, whose many forms have been given infraspecific status or described as separate species, but more material is needed from area for further studies.

Fl. Feb.-March. *Vern.* Bugraun, Talma

3. **Papaver decaisnei** Hochst. et. Steud. ex Boiss. in Ann. Sc. Nat. Ser. 2.16:372. 1841. (Fig. 5,A-D).

P. dubium var. *decaisnei* (Hochst. et Steud. ex Boiss.) Elk., Tent. Mon. Papav. 25.1839.

Similar to the previous species but plants including peduncle glabrous, glaucous, upper leaves with usually broad, rounded clasping base.

Type: Iran, Ispahan, *Aucher Eloy* 4047 (G).

A-2 Mang el Bahar, 2 km before El Kaleba, coarse sandy soil, 8.4.1974, *M. Godeh* 87 (ULT); (with *P. rhoeas);* Mangel Baher, sandy soil, cult. field, 8.4.1974, *S. I. Ali* 1700 (ULT); **A-3** Tripoli, in front of Science Faculty, barley field, 6.3.1974, *S. El-Jaley 15 (ULT);* **B-4** Bu Grain, 9.4.1974 (with *P. rhoeas), G. Faris* 223 (ULT);

Distribution: Libya, Egypt, Sinai, Jordan, Iraq eastwards to Pakistan.

Our plants have up to 10 (-12) mm broad fruits. This is a new record for our area.

Fl. Feb-March *Vern.* Talma, rotba

4. **Papaver rhoeas** L., Sp. Pl. 507. 1753; Pamp., Pl. Trip. 115. 1914; Prodr. Fl. Cir. 212. 1931; Maire, l.c. 297, fig. 139; Keith, l.c. 729; (incl. vars.)

P. chanceliae Maire, Annot. Fl. Alg. in B.S.H.N. Afr. Nord. 6: 227. 1914; *P. agrivagum* Jord., Diagn. 96. 1864; *P. caudatifolium* Timb. in B. Soc. Hist. Nat. Toulouse 4: 163. 1870; *P. roubiaei* Vig., Hist. Pav. 39. 1814.

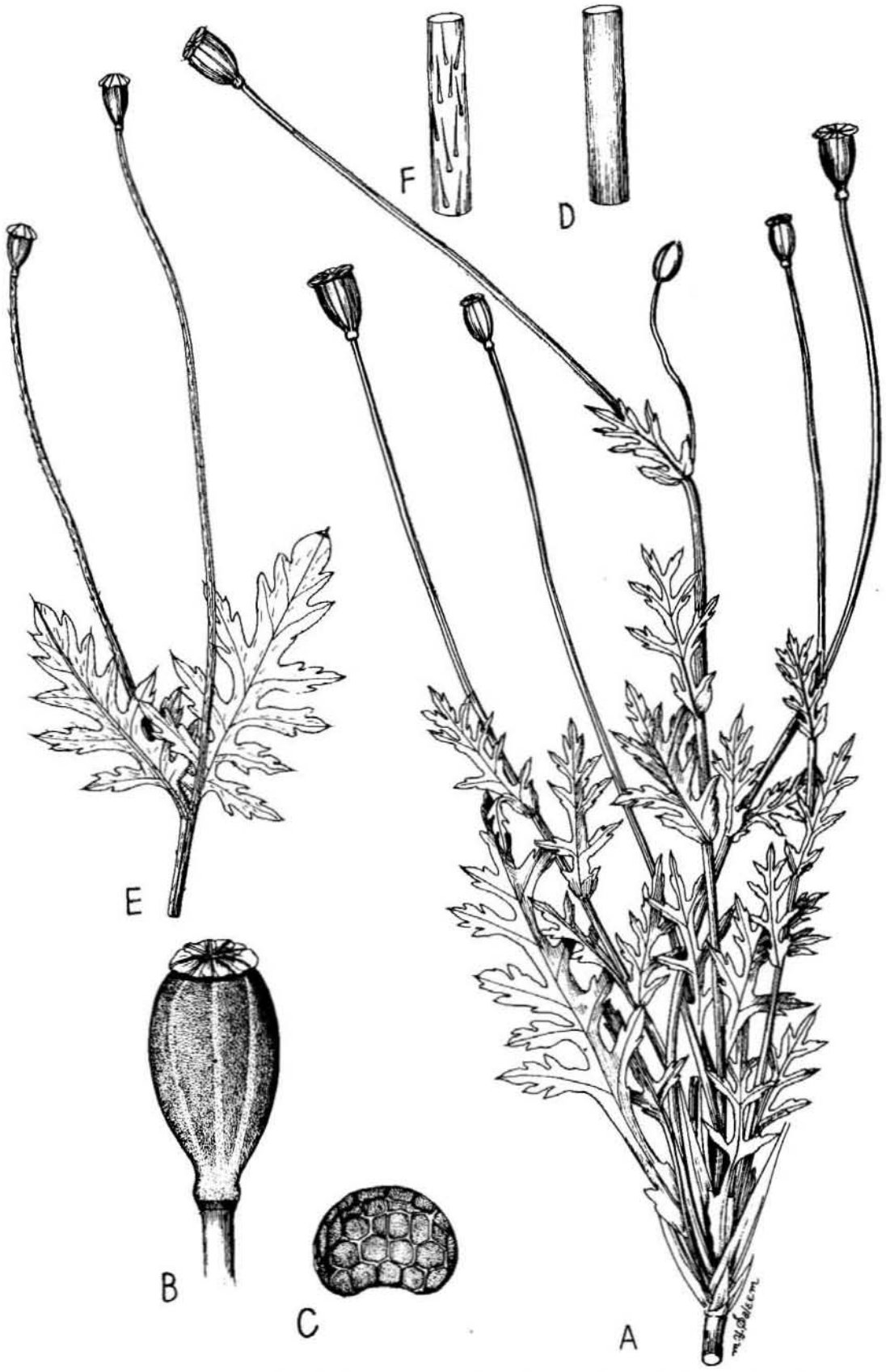


Fig. 5 **Papaver decaisnei:** A, habit x 0.5; B, capsule x 2; C, seed x 20; D, portion of peduncle x 5. **P. dubium:** E, portion of fruiting branch with young fruits x 0.5; F, portion of peduncle showing appressed hairs x 5.

PAPAVERACEAE

Annual, rarely biennial, erect to ascending, up to 60(-90) cm long, branched, usually hispid or bristly with spreading hairs on the stem and peduncles, rarely subglabrous or almost glabrous; latex white. Leaves very variable, up to 15 cm long, usually 1-2-pinnate, lower petiolate, upper sessile; segment coarsely dentate, terminal usually longer than the laterals. Petals 3-4 cm in diam., usually red, sometimes with dark spot at the base. Stamens filaments filiform, dark-bluish; anthers c. 1 mm, oblong, bluish. Pedicels up to 30 cm long in fruit, drooping above. Capsules subglobose to broadly obovoid or suboblong, 10-20 mm long, rounded at the base, glabrous, abruptly narrowed into an inconspicuous, very short stipe; stigmatic rays (5-) 8-12 (-18), almost reaching the ends of somewhat overlapping marginal lobes of the disk; seeds very small, dark-brown.

A very polymorphic species and needs careful studies within our area with adequate material and population studies. However, the terminal and longer or larger leaf lobe character seems to be fairly constant. Among our material the following varieties can be recognized:

1.	+ Hairs on peduncle spreading	2
	— Hairs on peduncle appressed, at least above	b) var. **strigosum**
2.	+ Flowers scarlet	3
	— Flower white	d) var. **albiflorum**
3.	+ Capsules subglobose with rounded base; stigmatic-disc almost flat to slightly conic in the middle	a) var. **rhoeas**
	— Capsules oblong, up to twice as long as broad, with subrounded base; stigmatic-disc subconic to conic	c) var. **agrivagum**

a) var. **rhoeas** (Fig. 6,A-D)

Hairs on peduncle spreading. Capsules globose to subglobose with rounded base.

Type: Europe, Herb. Linn. 669/5 (LINN).

A-2 Auinia, 14 km after Garian, 11.4.1974, *A.M.A.Razig* 364 (ULT); Garian, pink flowers, 10.4.1925, *A. Gammudi* 395 (ULT); El Ramea, 9.4.1974, *Milad, K* 191

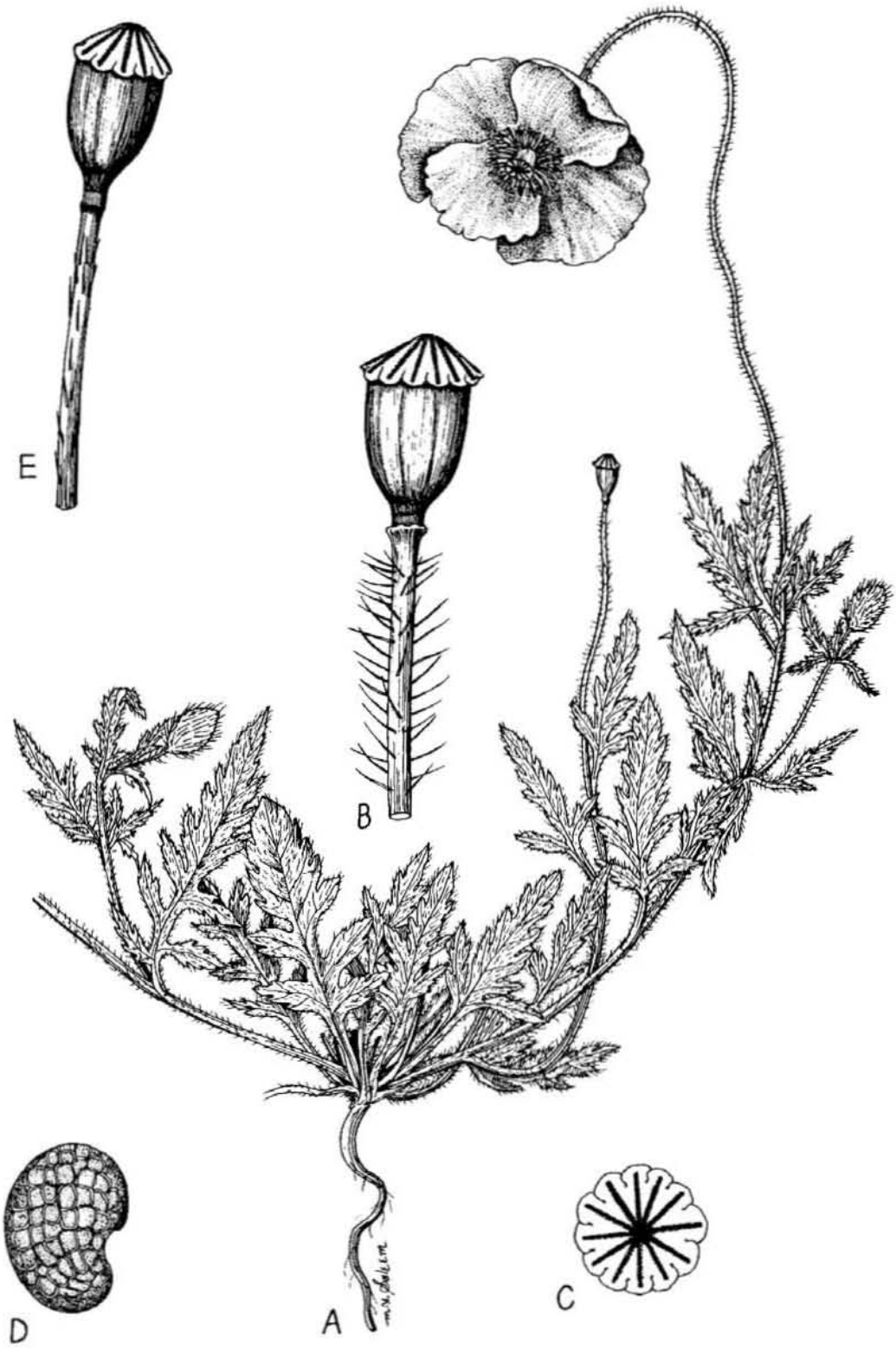


Fig. 6 **Papaver rhoeas** var. **rhoeas:** A, habit x 0.5; B, fruiting peduncle with spreading hairs x 2; C, stigmatic disc x 2; D, seed x 15; var. **Strigosum:** E, fruiting peduncle with appressed hairs x 2.

(ULT); El baheria, between Garian & Abugilan, barley fields, 17.4.1973, *S. I. Ali* 1648 (ULT); Mangh el Bahar, 2 km before Kaleba, cult. field, sandy soil, flowers red, 8.4.1974, *S.I.Ali* 1679 (ULT); 15 km after Kalebo towards Mizda, dry sandy ground, near dry wadi, 10.4.1974, *S.I.Ali* 2040 (ULT); Yefren, 10.4.1975, *Zenab* 348 (ULT); Kleba, abundant, 10.4.1975, *Zenab* 353 (ULT); **A-3** Bengashir, flowers red, 25.3.1976, *Amina* 27 (ULT); 9 km E. Tripoli, 3.3.1967, *I. S. Farag* 25 (ULT); Tripoli, University Campus, dark-red flowers, 13.3.1972, *S.I.Ali* 6 (ULT); Sharshara, *Amina* 29 (ULT); 15 km from Bengashir, flower red, 25.3.1976, *M.M. Shuahdi* 18 (ULT); *M.A.Tarbello* 21 (ULT); Misrata, abundant, 10.4.1975, *Zenab* 170 A (ULT); 15 km from Bengashir, 25.3.1976, *M. M. Shuehdi* 5 (ULT); **A-6** Tokra, seaside, hard gravel and limestone, erect, flowers crimson, 3.3.1973, *S. I. Ali & S. A. Faruqi* 1252 B (ULT); **A-7** Marawa, fl. red, 2.3.1973, *A. S. Sharif* 117 (ULT); Susa, 28.2.1973, *A. S. Sharif* 68 (ULT); *A. El tiafe* 61 (ULT); *S. I. Ali & S. A. Faruqi* 1056 (ULT); Gebel Akhdar, Feb.-March, 1973, *Nuria* s.n. (ULT); *Samira* 72 (ULT); **A-7** Wadi Derna, 20.1.1967, *L. Boulos* 1268 (ULT); c. 5 km from Baida towards Shahat, 20.6.1972, *S. I. Ali* 745 & 746 (ULT); 5 km from Baida towards El Merj, roadside, smaller flowers, 23.6.1972, *S.I.Ali* 876 (ULT).

Distribution: Europe, Asia and N. Africa.

b) var. **strigosum** Boenn., Prodr. Fl. Monast. 157, 1824; Maire l.c. 299 (Fig. 6,E).

Papaver strigosum (Boenn.) Schur., Verh. Naturf. Ver. Brunn. 15(5): 66. 1877; *P. tenuissimum* Fedde in Bull., Herb. Boiss. ser. 2.5: 446. 1905.

Very similar to the tupe variety but hairs on peduncle (at least above) appressed, fruit subglobose to suboblong.

A-3 Misrata, abundant, 10.4.1975, *Zanab Abu Raya* 170 B (ULT); Labda, pink flowers, 29.3.1975, *A. Gammudi* 216 (ULT); 15 km from Bengashir; annual herb, 23.3.1976, *Randa* 1 (ULT); Sharshara, 25.3.1976, *A.M.Dlango* 28 (ULT); **A-7** Gebel Akhdar, 26.3.1973, *Nuria Elmigerby* s.n. (ULT).

Distribution: Europe, N. Africa, Asia.

An intermediate taxon between *P. dubium* L. and *P. rhoeas* L., resembling the former in appressed peduncle hairs and the latter in fruit shape which sometimes are not exactly rounded at the base, and create confusion between this and *P.*

dubium; however, the leaf lobes are like those in *P. rhoeas*. It is said to be a hybrid between this species and *P. dubium*.

c) *var.* **agrivagum** (Jord.) Beck, Fl. Nied. Oesterr. 433. 1890; Maire, l.c. 301. (Fig. 7).

P. agrivagum Jord., Diagn. 96. 1864; *P. caudatifolium* Timb. in Bull. Soc. Hist. Nat. Toulouse 4: 163. 1870; *P. rhoeas* var. *caudatifolium* (Timb.) Fedde in Engler, Pflanzenr. 40: 104. 1909.

Leaf segment narrow, linear or lanceolate, serrate, Capsules up to 12 x 5 mm, oblong or suboblong with subrounded base; stigmatic-disc conic.

A-3 Tripoli, University Campus, roadside, sandy ground, flowers scarlet without a black spot at the base, 30.4.1976, *S. M. H. Jafri* 6639 (ULT); 6 km from Tarhuna, flowers deep orange, sandy soil, 14.4.1972, *S. I. Ali* 195 (ULT); Misrata, abundant, 10.4.1975, *Zenab, A.* 170 (ULT).

Distribution: N. Africa.

Capsule seems very much like those in **P. syriacum** Boiss. et Reut. but leaves different.

d) var. **albiflorum** Elkan ex O. Kuntze in Act. Hort. Petrop. 10: 161. 1887.

P. rhoeas var. *leucanthemum* Fedde in Engler, Pflanzenr. 40: 299. 1919; Pamp., Prodr. Fl. Cir. 212. 1931.

Flowers white.

A-7 5 km from Baida towards Shahat, 20.6.1972, near cult. field, flowers white, *S. I. Ali* 747 (ULT).

5. **Papaver somniferum** L., Sp. Pl. 508. 1753; Pamp., Pl. Trip. 115. 1914; Prodr. Fl. Cir. 212. 1931; Maire, l.c. 292. fig. 137; Keith, l.c. 730 (incl. vars.).

A robust annual, up to 120 cm tall, apparently glabrous, glaucous with ovate-oblong, cordate-amplexicaul dentate leaves, up to 15 cm long. Flowers large,

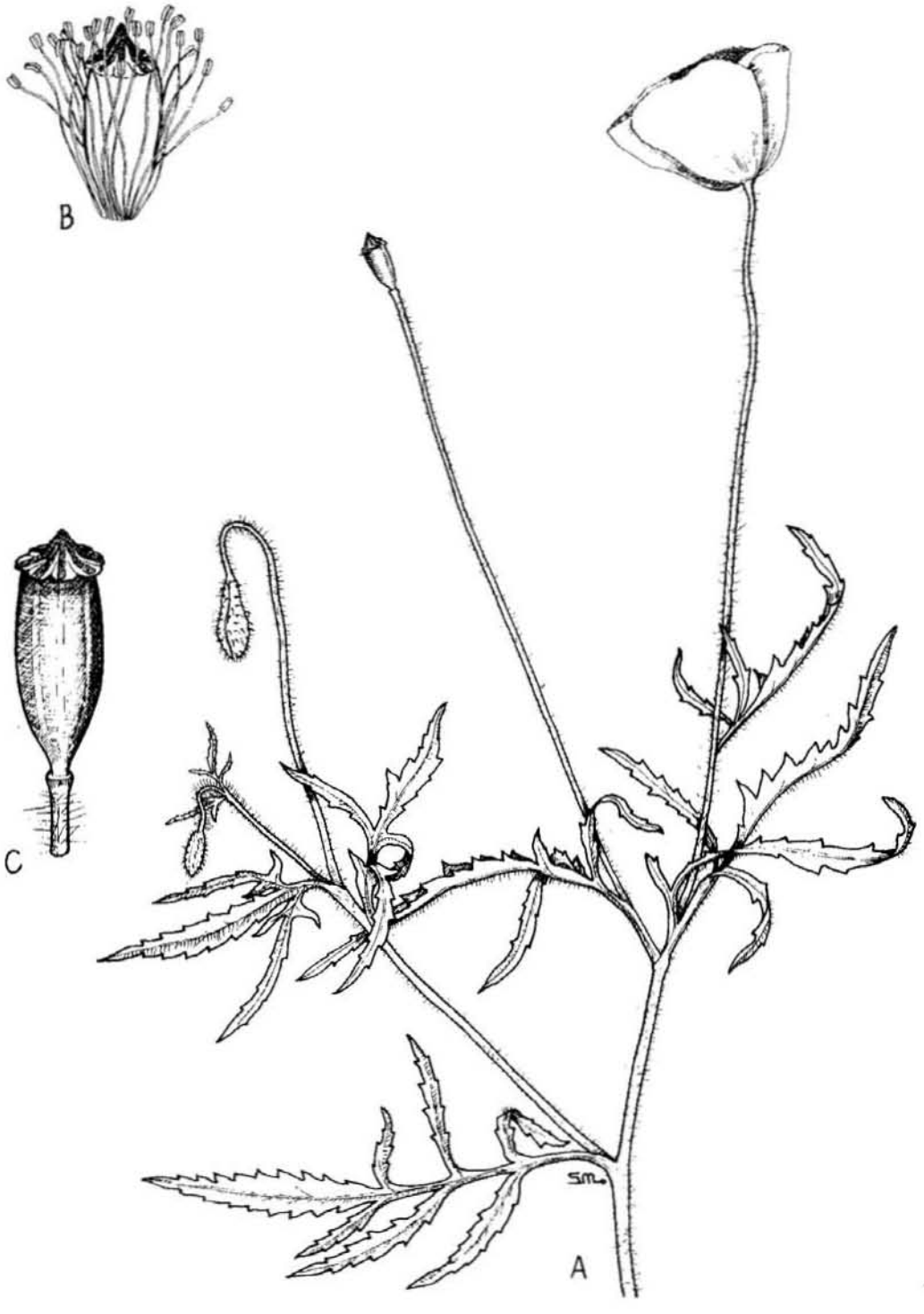


Fig. 7 **Papaver rhoeas** var. **agrivagum:** A, flowering and fruiting branch x 0.5; B, stamens and gynoecium x 2; C, capsule x 2.

showy, 5-10 cm in diam., white, pink or reddish, rarely pale violet. Capsules subglobose, up to 5-7 x 4-5 cm; stigmatic rays 8-12 (-18), not quite reaching the edge of the lobes.

Type: Europe, Herb. Linn 669/8 (LINN).

A-3 Tripoli, University Campus, near the Faculty of Science, 22.4.1975, *Zenab Abou Raya* 460 (ULT); behind Science Faculty, escape, April, 1977, *Mohamed Ahmad* (ULT).

Distribution: Europe & Asia (cultivated).

Known from cultivation as an ornamental in Libya. Opium is otained from this plant which is medicinally important.

Fl. Feb.-March. *Vern.* Khashkhash

4. ESCHSCHOLTZIA*

Cham. in Nees, Horae Phys. Berol. 73, t. 15. 1820

Glabrous herbs with watery juice, ternately segmented leaves and long peduncled, large showy, yellow or whitish flowers. Capsule slender 1-loculed, dehiscent by 2 valves from the base to apex, many seeded.

About 10 species, mostly N. American; represented in Libya by 1 cultivated species.

***Eschscholtzia californica** Cham., l.c. 74, t. 15.

Erect to diffuse perennial, up to 60 cm long; leaves 10-30 cm long, decompound petiolate, with linear ultimate segments, c. 1 mm broad. Flower buds 2-3 x 1 cm. Flowers 4-8 cm across, orange or yellow; peduncles 6-20 cm long. Capsule 7-10 cm x 3-4 mm, longitudinally ribbed, glabrous; seeds globose, black, c. 2 mm in diam.

Type: Described from California.

A-3 Tripoli, Govt. Agriculture farm, Sidi Msri, flowers yellow, 13.2.1976, *Randa* 65 (ULT).

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Distribution: A native of California & Oregon (N. America), widely cultivated in Europe, Asia and N. Africa as an ornamental.

Sometimes cultivated as an ornamental in Libya; recorded for the first time.

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